

What Is Claimed Is:

1. A polymer gel composition comprising a liquid and a charged polymer gel that changes its volume by absorbing or releasing the liquid in accordance with an imposed electric field.

2. The polymer gel composition according to Claim 1, wherein the liquid comprises an insulating liquid.

3. The polymer gel composition according to Claim 1, wherein the liquid possesses a volumetric resistivity of $10^3 \Omega$ or higher.

4. The polymer gel composition according to Claim 1, wherein the charged polymer gel comprises an ionic polymer gel.

5. The polymer gel composition according to Claim 1, wherein the charged polymer gel comprises an ionic polymer gel containing a charging agent.

6. The polymer gel composition according to Claim 1, wherein the charged polymer gel comprises a non-ionic polymer gel containing a charging agent.

7. The polymer gel composition according to Claim 1, wherein the charged polymer gel comprises a light controlling material.

8. The polymer gel composition according to Claim 5, wherein the charging agent comprises a light controlling material.

9. The polymer gel composition according to Claim 6, wherein the charging agent comprises a light controlling material.

10. The polymer gel composition according to Claim 1, wherein the charged polymer gel has a spherical form.

11. An optical element comprising a polymer gel composition that comprises a liquid and a charged polymer gel that changes its volume by

absorbing or releasing the liquid in accordance with an imposed electric field.

12. The optical element according to Claim 11, further comprising an electric field applying unit that applies an electric field to the polymer gel composition.

13. The optical element according to Claim 11, further comprising an electrode that applies an electric field to the polymer gel composition, wherein the charged polymer gel is fixed on the electrode.